

What is claimed is:

1. A method for removing paint from plastic parts which comprises treating the painted part with a solvent mixture of a high-boiling aprotic polar organic solvent and a pH adjuster.
2. The method of claim 1 wherein the pH adjuster is an aqueous mineral acid.
3. The method of claim 1 wherein the pH adjuster is a tetraalkyl ammonium hydroxide.
4. A method for removing paint from plastic parts which comprises treating the painted part with a solvent mixture of a high-boiling pyrrolidone or piperidone lactam solvent and an aqueous mineral acid.
5. A method for removing paint from plastic parts which comprises treating the painted part with a solvent mixture of an aqueous mineral acid and a solvent selected from the group of dimethylsulfoxide, dimethylacetamide, dimethylformamide and a terpene liquid.
6. A method for removing paint from plastic parts which comprises treating the painted part with a solvent mixture of a high-boiling pyrrolidone or piperidone lactam solvent and a tetraalkyl ammonium hydroxide.
7. A method for removing paint from plastic parts which comprises treating the painted part with a solvent mixture of a tetraalkyl ammonium hydroxide and a solvent selected from the group of dimethylsulfoxide, dimethylacetamide, dimethylformamide and a terpene liquid.
8. The method of claim 1 wherein ultrasonic energy is applied to the combination of the painted part and the solvent mixture.
9. The method of claim 1 wherein the painted part is comminuted.
10. The method of claim 1 wherein the painted part is kept intact.
11. The method of claim 7 wherein the comminuted part is stirred in the solvent mixture.
12. The method of claim 1 wherein the solvent is selected from the group consisting of N-methyl pyrrolidone, N-hydroxyethyl pyrrolidone, N-cyclohexyl pyrrolidone, N-ethyl

pyrrolidone, 1,5-dimethyl piperidone, 1,3-dimethyl piperidone, and 1,3-dimethyl-2-imidazolidinone and mixtures thereof.

13. The method of claim 12 wherein the solvent is N-methyl pyrrolidone.
14. The method of claim 2 wherein the acid is selected from the group consisting of hydrochloric, sulfuric and phosphoric acid.
15. The method of claim 14 wherein the acid is hydrochloric acid.
16. The method of claim 15 wherein the acid is 36-37% hydrochloric acid.
17. The method of claim 8 wherein the ultrasonic energy is applied at a frequency of about 25 kHz.
18. The method of claim 1 which is carried out at a temperature of from about 40°C to about 150°C.
19. The method of claim 19 which is carried out at a temperature of from about 70°C to about 90°C.
20. The method of claim 1 wherein the plastic is nylon.
21. The method of claim 1 wherein the plastic is thermoplastic polyolefin.
22. The method of claim 1 wherein the plastic is acrylonitrile-butadiene-styrene.
23. A method of removing automotive paint systems from reject plastic parts which comprises the steps of
 - a) immersing the parts in the solvent mixture of claim 1 at about 70 - 90°C and applying ultrasonic energy at a frequency of about 25 kHz for about 30 – 40 minutes;
 - b) rinsing the parts with water one or more times; and
 - c) drying the parts.
24. A method of removing automotive paint systems from waste plastic parts which have been comminuted into plastic chips which comprises the steps of
 - a) immersing the plastic chips in the solvent mixture of claim 1 and mixing for from about 15 minutes to about 2 hours at about 70 - 90°C;

- b) separating the paint particles from the plastic substrate and the solvent mixture;
- c) rinsing the chips; and
- d) drying the chips.

25. A solvent mixture for removing paint from plastic which comprises a high-boiling aprotic polar organic solvent and a pH adjuster.

26. The solvent mixture of claim 25 wherein the high-boiling aprotic polar organic solvent is selected from the group consisting of N-methyl pyrrolidone, N-hydroxyethyl pyrrolidone, N-cyclohexyl pyrrolidone, N-ethyl pyrrolidone, 1,5-dimethyl piperidone, 1,3-dimethyl piperidone, 1,3-dimethylimidazolidinone, limonene, dimethylsulfoxide, dimethylformamide, and dimethylacetamide and mixtures thereof.

27. The solvent mixture of claim 26 wherein the solvent is N-methyl pyrrolidone.

28. The solvent mixture of claim 26 wherein the solvent is limonene.

29. The solvent mixture of claim 25 wherein the pH adjuster is an acid is selected from the group consisting of hydrochloric, sulfuric and phosphoric acid.

30. The solvent mixture of claim 29 wherein the acid is hydrochloric acid.

31. The solvent mixture of claim 30 wherein the acid is 36-37% hydrochloric acid.

32. The solvent mixture of claim 25 wherein the pH adjuster is a tetraalkyl ammonium hydroxide.

33. The solvent mixture of claim 32 wherein the tetraalkyl ammonium hydroxide is tetramethyl ammonium hydroxide.

34. The solvent mixture of claim 25 which also comprises a surfactant.

35. The solvent mixture of claim 34 wherein the surfactant is an alcohol alkoxylate phosphate ester or a non-linear alcohol alkoxylate.

36. A method for removing paint from plastic parts which comprises treating the painted part with a solvent mixture of a high-boiling pyrrolidone or piperidone lactam solvent, a surfactant and an aqueous mineral acid.

37. The method of claim 29 wherein the surfactant is an alcohol alkoxylate phosphate ester or a non-linear alcohol alkoxylate.
38. Plastic parts that have been readied for paint application by immersion in a mixture of a high-boiling aprotic polar organic solvent and a pH adjuster to remove any prior paint system applied to the part.
39. Plastic parts that have been readied for paint application by immersion in a mixture of a high-boiling aprotic polar organic solvent, a surfactant and a pH adjuster to remove any prior paint system applied to the part.